# Risk, Issues
# and
# Lessons Learned:
# Maximizing Risk Management in the DoD Ground Domain

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# Why do Risk Management?

# *Why do Risk Management?*

**"There is only one reason for risk management:
To assure the program decision-makers learn about and
deal with important risks before they turn into issues".**
**- Carnegie Mellon University "Risk Management
Overview for TACOM"**

*Benefits of Risk Management  include:*
- *Risk is a proactive approach - preventing problems before they occur. Issue management is a reactive approach – fixing issues that exist.*
- *Understanding your risks and putting measures in place to prevent issues* **– doing it right the first time.**
- *Minimize or prevent cost overruns, schedule delays, and performance problems*
- *Product and design quality are improved.*
- *Maximizing usage of resources.*
- *Promoting teamwork and system engineering.*
- *Communication to stakeholders and decision makers.*

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# Risk vs. Issue

- A risk is something that has a <u>likelihood</u> of occurring in the <u>future</u>.

- An issue is something that has <u>already happened</u> or will <u>certainly happen</u>.

- A risk can be <u>mitigated</u>; an issue must be <u>corrected</u>.

- Risks, when mitigation is unsuccessful, become issues after an event has occurred, such as testing (risk – "if testing fails", issue "testing has failed"), a date where mitigation was required by, etc.

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# DoD Risk Management

| Risk Planning | Risk Assessment | Risk Handling / Mitigation | Risk Monitoring |

## RISK DOCUMENTATION

What project/program requires Risk Management?
- Identify baseline for cost, schedule and performance for the project/program.

- Create Risk Management Plan for the project/program.

- Assign roles and responsibilities for the project/program.

- Complete risk training for the project/program's Risk IPT.

What can go wrong?
- Study WBS, SOW, IMP/IMS, EVM.
- Lessons learned.
- Review IPTs' areas of responsibility.
- Ask "why" multiple times.

How big is the risk?
- Consider likelihood of root cause occurrence.
- Identify consequences in (Cost, Schedule, and Performance).

What will you do about it?
- Eliminate the root cause.
- Control the root cause or consequence.
- Transfer the risk.
- Assume the level of risk.

How is the planned risk mitigation being implemented?
- Determine planning what budget & requirements needed.
- Provide a coordination vehicle with management, etc.
- Document changes.

How are things going?
- Communicate risks.
- Monitor risks plans.
- Review status through event driven technical reviews and a risk review board.
- Review watch risks.

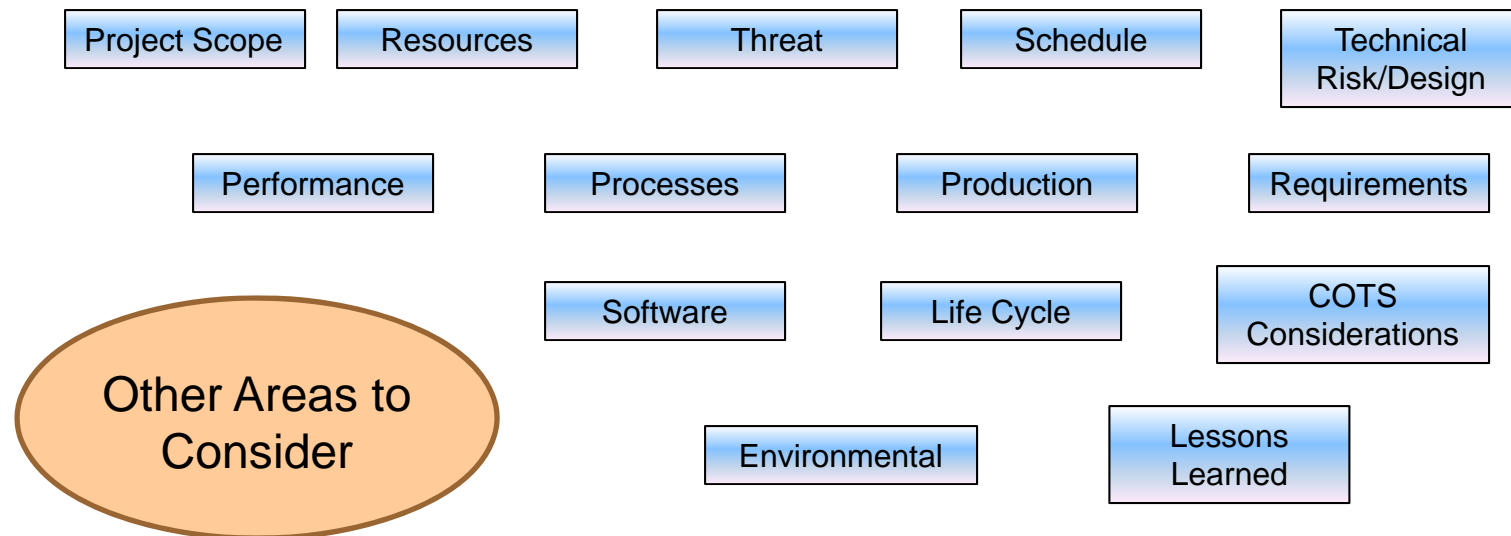**This is a iterative process for new risks.**

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# Risk Identification Resources

Early on in the program, a Work Breakdown Structure (WBS) should be established. This will breakdown the program into product and process elements. Examination of each item in the WBS for things that could go wrong is inherent to risk management. Ask "Why, Why, Why…" until the source of the risk in uncovered.

Have all the functional areas been consulted for potential risk items?

| | | |
|---|---|---|
| - Program Management | - Sustainment | - Human System Int. |
| - Engineering | - Contractors/OEMS | - Safety |
| - Subject Matter Experts (SMEs) | - Modeling and Simulation | - RAM Support |
| - Systems Engineering | - Testing | - Procurement |
| - Business Management | - Logistics | - Contracting |
| - Survivability | - Government Furnished Equipment | - Financial Management |
| - Quality | - Capabilities Insertion | - Joint Program Office |
| - Survivability | | |

| Project Scope | Resources | Threat | Schedule | Technical Risk/Design |
|---|---|---|---|---|

| Performance | Processes | Production | Requirements |
|---|---|---|---|

| Software | Life Cycle | COTS Considerations |
|---|---|---|

**Other Areas to Consider**

| Environmental | Lessons Learned |
|---|---|

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## Risk Management Checklist

Early on in the program, a WBS should be established. This will breakdown the program into product and process elements.

Examination of each item in the WBS for things that could go wrong is inherent to risk management. Ask "Why, Why, Why…"

until the source of the risk in uncovered. Other items that should also be examined are:

Have all the functional areas been consulted for potential risk items?
- · Quality?
- · Engineering?
- · Logistics?
- · Test?
- · Budget?
- · Program Management?
- · Environmental?
- · Safety?
- · Production?

This checklist is not meant as an all encompassing document, but rather a thought starter into some additional questions that may help uncover programmatic risks.

### Resources:
Is the project sufficiently staffed (Engineers, OEM personnel, Logistics, PM, etc.)? What are the risks if it is not?

Are funds available to support risk management resources including staff and tools?

Does the government/contractor have an adequate amount of personnel to support the product/program?

Is the qualification of the personnel assigned to support the product/program adequate?

Have all subject matter experts been consulted?

Are there any industrial base issues that introduce risk?

Are there any resource constraints that introduce risk?

Are there any personnel issues that introduce risk?

Are there any training needs that have not been met that would help perform risk management?

### Project Scope:
Is the project scope well understood by all parties?

Are the development processes well defined?

Is the supplier/OEM involved in risk identification and mitigation?

Were lessons learned from similar programs reviewed in order to identify potentially related risks?

Has a Work Breakdown Structure (WBS) been created for this program?

Is there a configuration management plan in place?

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https://acc.dau.mil/CommunityBrowser.aspx?id=25811

http://www.afit.edu/cse/page.cfm?page=164&sub=95

# Technical Risk Assessment Approach

- ❑ Step 1: Gather system information (WBS, system boundary, development plan, etc.).
- ❑ Step 2: Identify **critical technologies** (need to be delivered for the system to work) and other **technologies of interest**.
- ❑ Step 3: Gather/assess **TRL** for each technology from Step 2.
- ❑ Step 4: Assess manufacturing readiness (**MRL**) of each technology.
- ❑ Step 5: Assess Integration Readiness Level (**IRL**) for each technology.
- ❑ Step 6: Identify potential technical risk events for each technology.
- ❑ Step 7: Gather historical program data on development, integration and manufacturing.
- ❑ Step 8: Assess **probability distributions** for each technology: TRL 7 by MS C; MRL 8 by MS C; IRL 8 by MS C.
- ❑ Step 9: Assess the **consequence** to performance, schedule, or cost if technology is not delivered within the timeframe and cost targets.

**Steps 8 & 9 accomplished during Risk Workshop**

- ❑ Step 10: Use **Monte Carlo simulation** to determine expected **likelihood** that technologies will not be delivered within the timeframe and cost target.
- ❑ Step 11: Use DoD risk reporting matrix to determine **risk rating for each technology**.
- ❑ Step 12: Perform **sensitivity analysis** on probability distributions and consequence levels.

Assessment will include a risk rating for each technology, an explanation of risk drivers, possible risk mitigations, and a risk comparison across the alternatives.

# Risk Mitigation Approaches

# Risk Mitigation Approaches

**Avoid:** Develop a strategy to avert the likelihood and/or consequence by selecting a different approach or not pursuing the option at all. Consider this technique when multiple design or programmatic options are available (sometimes "eliminate")

**Transfer:** Develop a strategy to place the risk with the party most able to do something about it.

**Assume:** Accept consequences of the risk, with frequent monitoring to determine if the risk actually occurs, and that the impact is as predicted (and is tolerable) if it does. Also known as accept.

**Control:** Develop a strategy to lower the risk by reducing its likelihood, consequence, or both components with tasks in the IMS. This approach is sometimes referred to as handle or mitigate.

**Watch:** Monitor and periodically re-evaluate the risk for change.

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# Maximizing Risk Management in the DoD

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# Current State of Risk Management

- *Risks are tracked in a database or spreadsheet.*

- *Issues are tracked in a database or spreadsheet.*

- *Failure Mode and Effects Analysis (FMEAs) may or may not be required by contract and access to them and use of them may be limited.*

*There is no traceability or linkage from FMEAs, to risks and mitigation plans, to issue resolution.*

| **FMEA** **(Failure Mode and Effect Analysis)** | **Risk Management** | **Issue Management** |
|---|---|---|

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# Maximizing Risk Management:

**FMEA (Failure Mode and Effect Analysis)**

Product, Process, etc FMEA identify risks which are then logged into Risk Recon

Risk Mitigation from Risk Recon trace back and populate FMEA, new RPN numbers.

**Risk Recon**

An issue's corrective action plan or path forward will likely have new associated risks, which can be entered and traced back to original risk in Risk Recon.

When a risk becomes an issue, user can create an issue in the database and track the corrective action plan. Issues can also be entered independently.

**Issue Database**

Tie all systems together and have one searchable lessons learned database.

**Lessons Learned**

# Why a program should begin with a FMEA…

*FMEAs are an excellent way for a program to shorten design time, avoid program mistakes, and deliver a higher quality system to the warfighter in reduced time.*

*FMEAs should be required for systems or subsystems via the contract. They should be readily accessible and usable by the government.*

FMEA stands for <u>Failure Mode and Effect Analysis</u>.  Simply translated, it means that through some method we will identify how something can fail and what will happen if it does.  When done correctly it can be an expedient and thorough approach to risk identification.

Some definitions:

1. A definition of "failure"….*Failure is the inability to produce the desired output.  Failure may occur at any point within the function of a product or flow of a process.*

2. A definition of "effect"….*Effects are the result of failures.  The effect is the thing we are most interested in.  The power of the effect will dictate our level of action.  Not every failure will result in a severe effect and therefore not every failure needs to be addressed.*

3. A definition of "analysis" ….*Analysis means the investigation of the process being used such that it can be determined how failure occurs.  The analysis provides identification of the potential failures and then serves to rate their effects based on how severe they are, how often they might occur, and how easily we can find them.*

Without a thorough <u>ANALYSIS of the EFFECTS</u> it is difficult to assign resources efficiently.

*By using FMEA we can eliminate problems <u>BEFORE</u> they happen and <u>save time</u> and <u>money</u> on prioritized work.*

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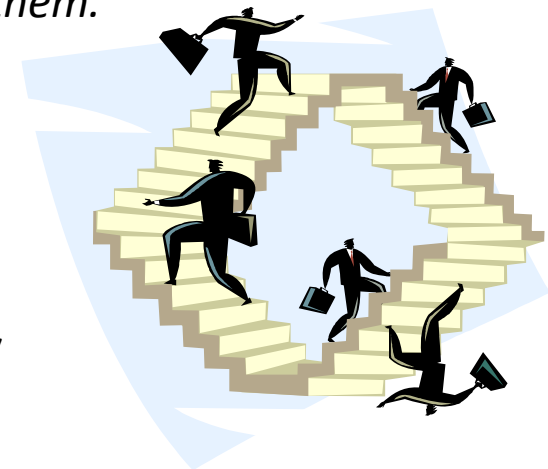
Although FMEA is FMEA no matter its application, over the years many variations on the same theme were stood up under similar names. Here are some of the most popular categories:

Design FMEA – Helps to identify how something can fail to do what it was designed to do or why it does things it should not do

- Generates too much heat
- Takes too long to accelerate
- Cannot track target

Process FMEA – Helps to identify how something can be improperly or unsafely manufactured or assembled

- Parts missing after assembly
- Improper torque on fasteners
- Operator must put self at risk to achieve task

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**Step 1 - Understand how things work in order to find the ways it can fail.**

Use proven, thorough approaches to describe all the elements of the process. Work Breakdown Structures and Process Maps are popular tools for this purpose.

Output
Hot dog ready for bun placement

Output
Completed hot dog sub-assy

Output
Hot dog ready to eat

| 1. Remove hot dog from grill | 2. Place hot dog in bun | 3. Add condiments |
|---|---|---|

Inputs
• Grill (hot)
• Hot dog (cooked)
• Tongs (min 10 inch length)

Inputs
• Bun (fresh)
• Hot dog (still hot)
• Tongs (min 10 inch length)

Inputs
• Ketchup (Heinz)
• Mustard (yellow)
• Onions (chopped)
• Chili (no beans)
• Hot dog sub-assy

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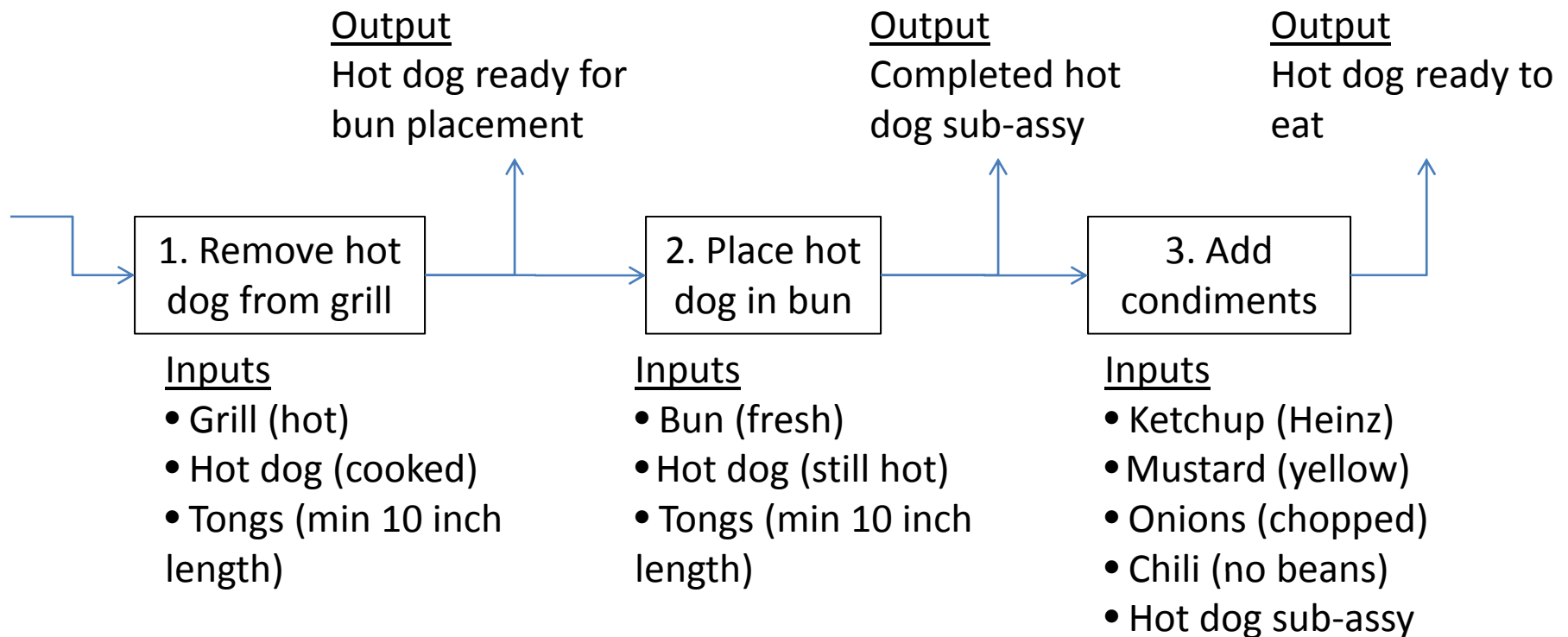
**Step 2 - Execute the analysis and discover the potential failures and effects, their causes, and ultimately what to do about it!**

| Item or step # from WBS, Process Map, or other | Process step function / requirements | Potential Failure Mode | Potential Effects of Failure | Severity | Potential Causes / Mechanisms of Failure | Occurrence | Current Process Controls Prevention | Current Process Controls Detection | Detect | R.P.N. | Recommended Actions | Responsibility & Target Completion Date | Action Results | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | Actions Taken | Severity | Occur | Detection | R.P.N. |
| 1 | Remove hot dog from grill | Hot dog is not "ready" | Delay: customer hungry | 7 | Grill is not hot | 1 | None | Temperature gauge on grill | 1 | 7 | | | | | | | |
| | | | | 7 | Hot dog is not hot enough (not cooked) | 4 | None | Use grill marks to indicate fully cooked status | 2 | 56 | | | | | | | |
| | | | | 7 | Hot dog is overcooked (burned) | 6 | None | Use grill marks to indicate fully cooked status | 2 | 84 | | | | | | | |
| | | Hot dog is not present | Major delay: Customer hungry, angry | 9 | Insufficient hot dog supplies, ran out | 7 | Educated guess on needs | None | 10 | 630 | Match hot dog count to guest list/update shopping list | G. Ratajczak One week prior to BBQ | Shopping list and RSVP list kept together, updated as guests call in | 9 | 7 | 1 | 63 |
| | | | | 9 | failure of pre-process steps (grill prep) | 1 | None | None | 2 | 18 | | | | | | | |
| 2 | Place hot dog in bun | Hot dog not in bun | Delay: Rework or get new hot dog | 7 | Operator error, missed bun | 1 | Hand/eye coordination | None | 2 | 14 | | | | | | | |
| | | Hot dog incorrectly positioned in bun | Dissatisfaction: Customer will have difficulty eating, or may have to adjust hot dog manually | 5 | Operator error, poor placement | 2 | Hand/eye coordination | None | 2 | 20 | | | | | | | |
| 3 | Add condiments | Hot dog does not meet end of line requirements (condiments missing) | Minor delay: more work needed | 3 | Favorite condiment not available (not present) | 5 | None | None | 10 | 150 | Use list while shopping to minimize mistakes/missing items | G. Ratajczak Two days prior to BBQ | Shopping list used at store | 3 | 5 | 1 | 15 |
| | | | | 3 | Favorite condiment not available (condiment specifications not met, substitution used) | 9 | None | None | 10 | 270 | Request condiment information at RSVP | G. Ratajczak One week prior to BBQ | Guests asked about preferences when they call to RSVP | 3 | 9 | 1 | 27 |
| | | Hot dog does not meet end of line requirements (unwanted condiments added) | Major delay: Scrap hot dog, start over | 9 | Wrong condiment added to hot dog | 9 | None | None | 10 | 810 | Do npot apply condiments until customer is present | G. Ratajczak Day of BBQ | No hot dogs "built" without customer present | 9 | 9 | 1 | 81 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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| | | | Dissatisfaction: Customer will have | | | | | | | | | | | | | |
| | Hot dog does not meet end of line requirements (unwanted condiments added) | | Major delay: Scrap hot dog, start over | 9 | Wrong condiment added to hot dog | 9 | None | None | 10 | 810 | None | None | | | 10 | | 810 |
| | | | | | (condiment specifications not met, substitution used) | 3 | None | None | 9 | 270 | information at RSVP | One week prior to BBQ | preferences when they call to RSVP | 3 | 9 | 1 | 27 |
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**9 x 9 x 10 = 810 !!!** The analysis says this failure, along with its severe effect, is not only likely to happen, but we currently have no way to deal with it!

Unclassified

I can't address every failure – only the most important ones. Where do I draw the line? How do I decide where to focus resources?

| Item or step # from WBS, Process Map, or other | Process step/function | Potential Failure Mode | Potential Effect | Sev | Potential Cause | Oc | Current Process Controls Prevention | Current Process Controls Detection | Detect | R.P.N. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 9 | None | None | 10 | 810 |
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# Manage RISK NOW!          or….          Deal with FAILURE later

PREVENT failure from occurring or minimize its effect by acting PROACTIVELY. Focus your efforts on the critical few items worth pursuing. Ensure SUCCESS by minimizing cost and reducing risk.

← Success
Failure →
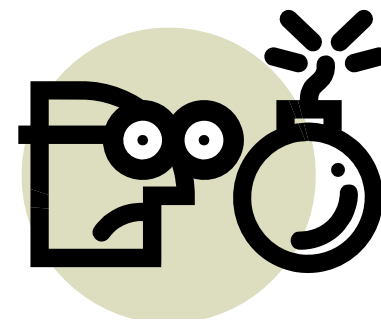
Lack of ANALYSIS leads to inefficient problem identification. Resources can be quickly expended addressing incorrect or insignificant concerns. The most severe failures may still happen and will always cost more to address reactively.

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Successful FMEA exercises result in very complete risk identifications. In turn, risk management is more successful in eventually reducing the failures which were identified as the most influential.

LOW RISK = BIG SAVINGS
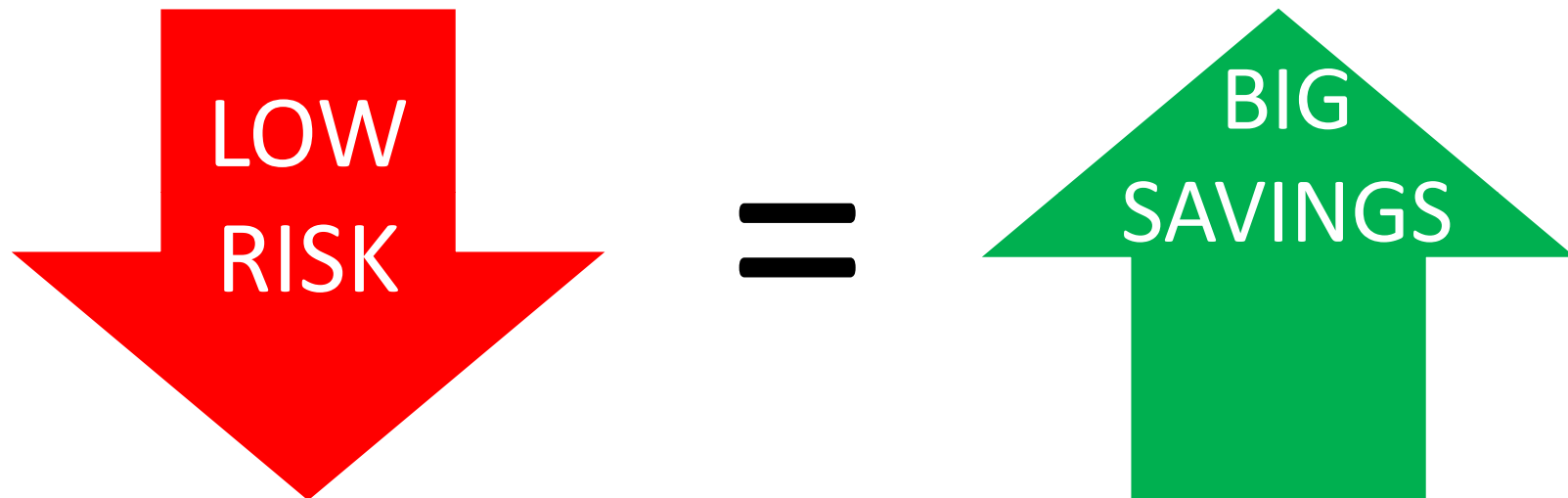
**SUMMARY:**

1. FMEA is not hard to do or understand
2. FMEA works on EVERYTHING
3. FMEA is the BEST way to identify risk
4. Managing risk early SAVES MONEY!

**ARE YOU USING FMEA?  CAN YOU AFFORD NOT TO?**

# Use it proactively to prevent failures

Explore the design and the processes of manufacturing and assembly to find the potential failures

Use the knowledge to put controls in place

Eliminate or diminish failures

Save time and money

# Use it reactively to solve problems

Interrogate the FMEA for similar or exact failures

Use the knowledge to put solutions in place

Eliminate or diminish failures

Save time and money

Use FMEA for root cause analysis
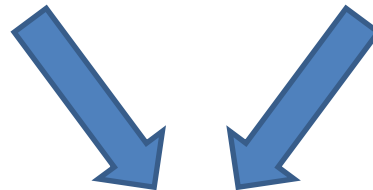
# Update existing FMEAs with lessons learned and provide the basis for FAILURE FREE next generation ideas

## What is Risk Recon?

*Risk Recon is a risk management tool jointly developed by Program Executive Office (PEO) Ground Combat Systems (GCS) and the Tank Automotive Research, Development and Engineering Center (TARDEC) for risk management.*

*The tool provides an easily accessible database for PEO, PMs and organizations to store and share information in one centralized location.  This provides greater opportunity for lessons learned.*

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# Risk Recon – Risk Management Tool Capabilities

- *Ease of Use –* training takes approximately 1 hour.

- *Lessons Learned*

- *Imbedded Reporting*

- *Integrated Process Flow*.

- *Traceability*

- *Accessibility*

- *Customization*

- *No Cost* – Since Risk Recon is owned by the US Army, there is no program cost for using this database for DoD organizations.

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# Current Risk Recon Users
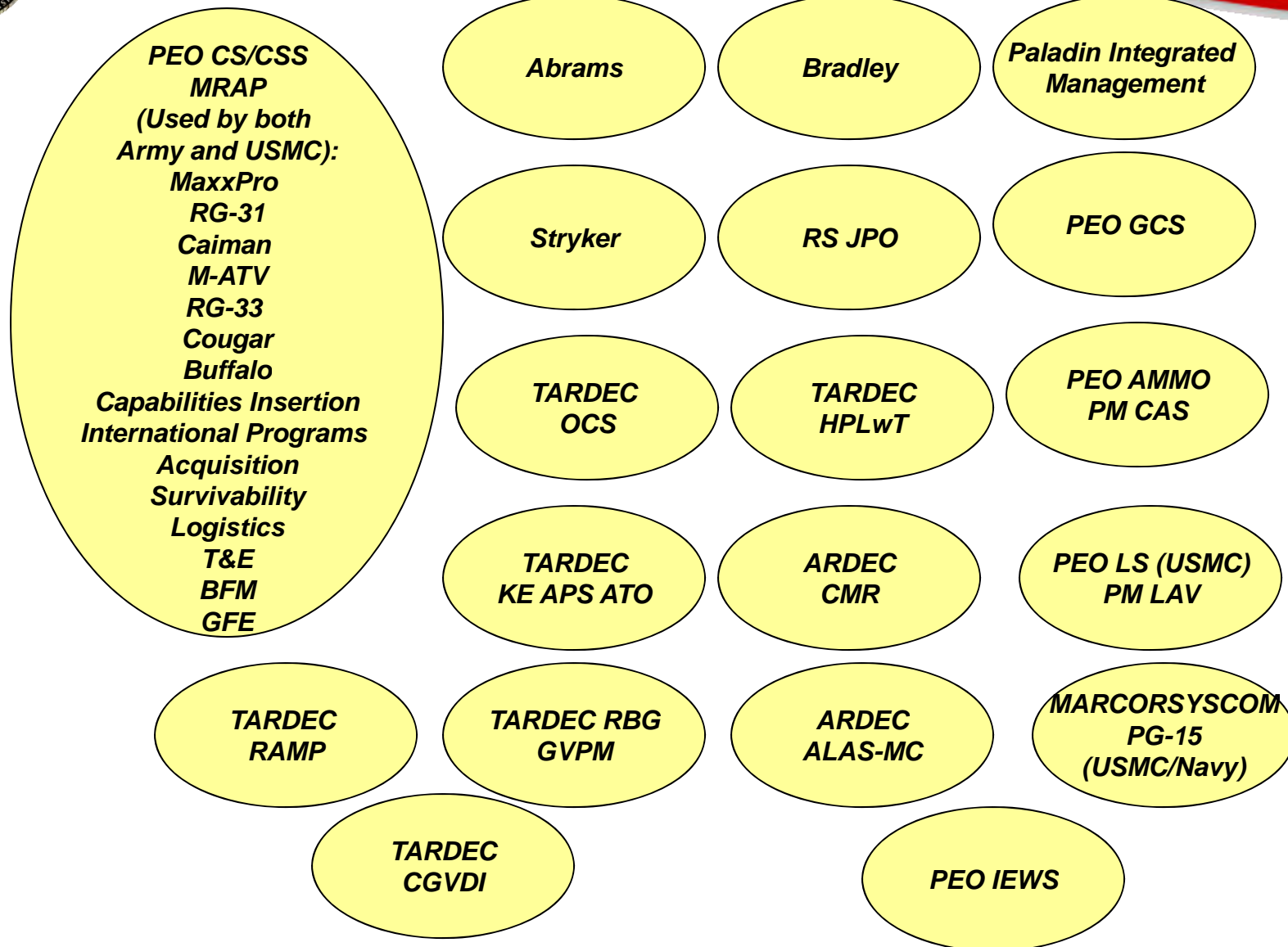
PEO CS/CSS
MRAP
(Used by both
Army and USMC):
MaxxPro
RG-31
Caiman
M-ATV
RG-33
Cougar
Buffalo
Capabilities Insertion
International Programs
Acquisition
Survivability
Logistics
T&E
BFM
GFE

Abrams

Bradley

Paladin Integrated Management

Stryker

RS JPO

PEO GCS

TARDEC OCS

TARDEC HPLwT

PEO AMMO PM CAS

TARDEC KE APS ATO

ARDEC CMR

PEO LS (USMC) PM LAV

TARDEC RAMP

TARDEC RBG GVPM

ARDEC ALAS-MC

MARCORSYSCOM PG-15 (USMC/Navy)

TARDEC CGVDI

PEO IEWS
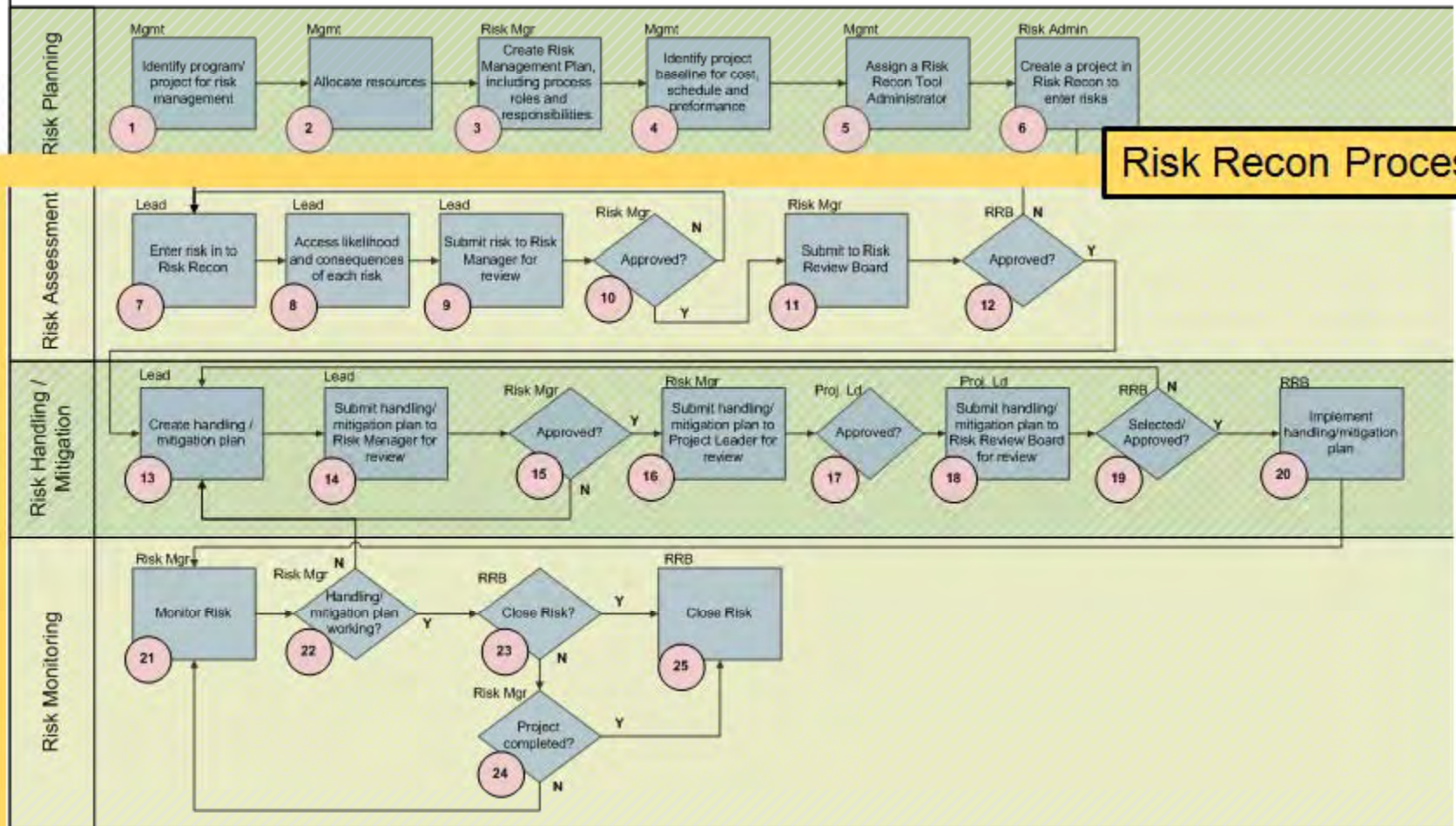
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Risk Management Process

**Tailored MRAP JPO Risk Management Process**
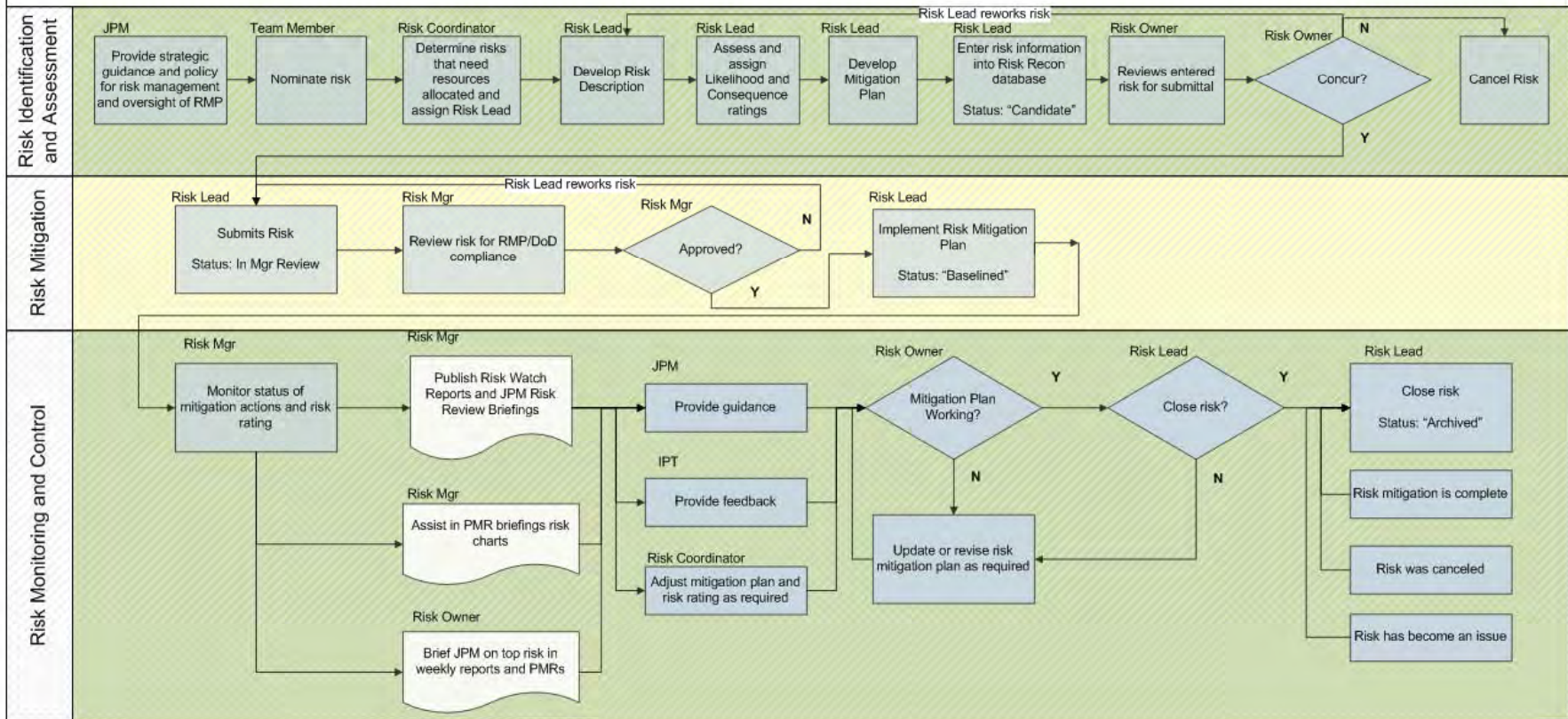
Version Date: 3/25/2011

**Approval authority for High, Medium and Low Risks resides with Risk Owners (over 65 risk leads)**

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# Consequence Guidance

## (Available in Risk Recon under "Help" and "Tip Sheet")

**Risk Recon Risk Management Tip Sheet**



"Knowing our risks provides opportunities to manage and improve our chances of success."

—Roger Vanscoy

### Consequence Table

| Rating/Description | Performance | Cost | Schedule |
|---|---|---|---|
| **5 (Catastrophic)** - Jeopardizes an exit criterion of current acquisition phase | Unacceptable; No viable alternatives exist | Program budget impacted by 10% or more; Program success jeopardized | Key events or milestones delayed by more than one month |
| **4 (Critical)** Potentially fails Key Performance Parameter (KPP) | Unacceptable; Significant changes required | Program budget impacted by 5%-10%, Significant portion of program management reserves must be used to implement workarounds | Critical path activities 2 weeks late; Workarounds would not meet milestones, Program success in doubt |
| **3 (Moderate)** Shorts a critical mission need but expect no breech of **KPP** threshold requirements | Below goal; Moderate changes required; Alternatives would provide acceptable system performance; Limited impact on program success | Budget impacted by 1%-5%; Limited impact on program success; Does not require significant use of program cost and or schedule reserves | Non-critical path activities one month late; Workarounds would avoid impact on critical path; Limited impact on program success |
| **2 (Marginal)** Requires the commitment of a minor portion of the program cost, schedule or performance reserve | Below goal but within acceptable limits; No changes required; Acceptable alternatives exist; Minor impact on program success | Budget impacted by 1% or less; Minor impact on program success; Minor commitment of program management reserves (schedule, cost) used for workarounds | Non-critical path activities late; Workarounds would avoid impact on key and non-key milestones; Minor impact on program success; Development schedule goals exceeded by 1%-5% |
| **1 (Negligible)** Remedy will require minor cost, schedule and/or performance trades | Requires minor performance trades within the threshold - objective range; No impact on program success | Budget not dependent on the issue; No impact on program success, Cost increase can be managed within program plan | Schedule not dependent on issue; No impact on program success; Schedule adjustments managed within program plan |

| Terms | Definitions |
|---|---|
| **Risk** | A measure of future uncertainties in achieving program performance goals and objectives within defined cost, schedule and performance constraints. Risk addresses the *potential* variation in the planned approach and suspected outcome. |
| **Issue** | An event that has already occurred or has 100% likelihood of occurring. |
| **Likelihood** | Probability that the risk will occur (based on ratings 1-5). |
| **Consequence** | Effect or impact on the program if risk becomes an issue (based on ratings 1-5). |

UNCLASSIFIED: Dist A. Approved for public release. #20815

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# Creating a Risk

**Risk Recon**

Home    Administration    Reports    New Users    Help

**Classified data must not be stored in this risk management tool**

**Edit Risk: Training Example - Loss of Power in Thunderstorms**
**Workflow Location:  Risk Lead Analysis**

[Back to the Home Page]  [View History]

[Save]  [Cancel]  [Submit]  [To Close, select Risk Status ▾]  [Close Risk]  [Watch Risk]

| Risk Info Sheet | Documents | Risk Info Team | Mitigation Plan(s) | Related Projects | Risk Lifecycle |

**Changes must be Saved first before navigating off this web page**

Risk Analysis (Click bar to expand/contract)

| | |
|---|---|
| **Risk ID:** | 1698 |
| **User Defined Risk ID:** | |
| **Risk Title:** | Training Example - Loss of Power in Thunderstorms  * |
| **Status** | Candidate ▾ |
| **Urgent:** | ☐ |
| Check to alert Risk Manager of time sensitive risk. | |
| **Open Date:** | 2/8/2010  * |
| **Last Saved On Date:** | 8/2/2010 3:17:29 PM |
| **WBS #:** | |
| **IMP/IMS #:** | |
| **Functional Groups:** | Configuration Management, Eng ▾ |
| **Risk Lead:** | Graf, Lisa ▾ * |
| | * required field |

• Filling out the risk information is easy.
• Initial risk input takes < 5 minutes.
• Additional time required for mitigation steps.

- Create a Risk Title.
- Confirm Open Date.
- Enter WBS #, IMP # if applicable.
- Check Functional Groups that may be affected by the risk.

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# Creating a Risk

| | | | |
|---|---|---|---|
| **Original Consequence (O):** | (4) Critical | ▼ | * |
| **Original Likelihood (O):** | (4) Highly Likely | ▼ | * |
| **Current Consequence (C):** | (4) Critical | ▼ | * |
| **Current Likelihood (C):** | (2) Low Likelihood | ▼ | * |
| **Residual Consequence (R):** | (2) Marginal | ▼ | |
| **Residual Likelihood (R):** | (1) Not Likely | ▼ | |

| | |
|---|---|
| **Risk Impacts** | |
| **Cost:** | ☑ |
| **Schedule:** | ☑ |
| **Performance:** | ☑ |
| **Other:** | ☐ |
| | |
| **Affects the Critical Path:** | ☐ |

- The Risk Matrix has three Risk Ratings:
  - Original
  - Current
  - Residual

- Select Risk Impacts:
  - Cost
  - Schedule
  - Performance
  - Other
  - Critical Path

Done

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# Creating a Risk

Administration - Risk Info

Page ▼   Tools ▼

**Description of Risk Condition:**
Clear and concise - cite only one Risk condition.

If there is a thunderstorm with high winds and lightning strikes occur, then loss of power to homes make occur and people may be without power.

Description of Risk – One sentence – an "IF/THEN/MAY" statement.

**Context:**
What, how, why, where of the risk condition.

If a thunderstorm occurs and high winds in excess of 60 mph occur (WHAT), then power lines may come down due to high winds (HOW) and loss of power may occur (WHAT). If lightning strikes occur (WHAT), then transformers may be hit and damaged (HOW) and loss of power may occur (WHAT). This may occur because power lines are exposed to the environment (WHY) and subject wind damage and lightning strikes. This can affect home and people (WHO) subdivision wide or to any building in the area that the power system supplies power to (WHERE).

Context of the Risk – The "Who, What, Where, When, Why, How and How Much?" of the risk.

**Consequence if realized:**
In terms of cost, schedule, performance and other.

If power is lost in a storm then homes will not have power. This can lead to loss of food in the refrigerator (COST), alarm clocks that don't work and people may be late to their jobs (SCHEDULE) and worrying about failed systems such as sump pump systems (PERFORMANCE) may cause performance issues at work to those affected.

Consequence – The "So What if it Happens?"

**Rationale for choosing that Mitigation plan:**
Comparison to other options, best benefit in terms of cost, schedule, performance, or impact on other teams.

Click the button below to create or edit Mitigation Steps and Target Dates.

[Mitigation Steps]

Mitigation Plans include:
NOTE - the person writing this risk bought a generator to tempoarily reduce the risk of power loss. This reduces the current risk, but is only a temporary interim mitigation steps.
Final Mitigation Plan:
1. Surveying the power outage database for areas that experience high power loss.
2. Conducting a root cause analysis for the highest risk area as to what the reason is for the power outages. (NOTE - root cause determined to be wind damage in a high wind corridor).
3. Determine what the new requirements are for system performance (how many outages a year, for how many hours and due to what root cause is acceptable) (NOTE - it was determined that

Mitigation Plan – Mitigation steps can be entered here or on the mitigation plan table. Mitigation steps should include target dates and persons responsible.

Done     Administration - Risk Info - Windows Internet Explorer     Local intranet | Protected Mode: Off     100%

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Unclassified

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# Creating a Risk

Changes must be Saved first before navigating off this web page

Summary (Click bar to expand/contract)

| | |
|---|---|
| **Mitigation Plan ID:** | 107 |
| **Name:** | Bury Power Lines * |
| **Status** | In Risk Review Board |
| **Open Date:** | |
| **Last Saved On Date:** | 6/4/2010 11:30:43 AM |
| **Risk Mitigation Method:** | Control * |
| **Risk Review Frequency:** | Daily * |
| **Mitigation Plan Lead:** | Graf, Lisa * |
| | * required field |
| **Mitigation Plan Summary (Plan overview and desired end state; residual risk.):** Desired End State. In Risk Assessment, "Residual" Risk. | The goal of the mitigation strategy is to put in long term and short term plans to reduce the risk of losing power so that the end state is that power will only be lost for a maximum of three hours at a time (the new requirement). |

Mitigation Plan Details (Click bar to expand/contract)

Mitigation Steps (Click bar to expand/contract)

| | Step | Mitigation | Due Date | Completion Date | Status | New Consequence | New Likelihood | Step Owner |
|---|---|---|---|---|---|---|---|---|
| Edit | 01 | Purchase a home generator | 3/1/2010 | | Complete | (4) Critical | (2) Low Likelihood | Barb Dmoch |
| Edit | 02 | Conduct power outage survey. | 3/4/2010 | | Complete | (4) Critical | (3) Moderate | Lisa Graf |
| Edit | 03 | Conduct power outage root cause analysis | 3/8/2010 | | Complete | (4) Critical | (3) Moderate | Shawn Haase |
| Edit | 04 | Determine new reqmt for max. downtime allowed. | 3/10/2010 | | Complete | (4) Critical | (3) Moderate | Cheryl Rassette |
| Edit | 05 | Conduct land availability survey | 3/12/2010 | | Complete | (4) Critical | (3) Moderate | Matt Sheehy |
| Edit | 06 | Determine requirements for burying power lines. | 3/15/2010 | | In Progress | (4) Critical | (3) Moderate | Mike Olsem |
| Edit | 07 | Formulate and present plan to management for approval. | 3/17/2010 | | In Progress | (4) Critical | (3) Moderate | Mike Baker |
| Edit | 08 | Bury the power lines, complete job. | 3/31/2010 | | Not Started | (2) Marginal | (1) Not Likely | Mark Mazzara |
| Edit | 09 | Demonstrate that time to repair of main line is <3 hours. | 4/1/2010 | | Not Started | (2) Marginal | (1) Not Likely | Brian Graham | Delete |
| Edit | 10 | Monitor area for 5 years to determine how effective the plan has gone. | 4/29/2015 | | Not Started | (2) Marginal | (1) Not Likely | Donna Brady | Delete |

Local intranet | Protected Mode: Off    100%

Mitigation Plan Table:
-Includes steps for mitigation.
- Indicates who is responsible and due dates.
- Shows the risks level accomplished with each step.

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**Risk Recon - Detailed Risk Report (FOUO)**

**HBCT Test Org / HBCT Test PMO / HBCT Training / HBCT Training / test three**

| Status | Current Con/Lik | Impact | Risk Title | Description of Risk Condition | Context | Consequence if Realized | Mitigation - Rational for Choosing that Mitigation Plan |
|---|---|---|---|---|---|---|---|
| Baselined | 4/4 | C/S/P/O | Hitting a deer | IF a driver hits a deer THEN their new car MAY be damaged. | The is a potential of hitting a deer. | Damage to a car. | 1. Add additional fog lamps to vehicle by Jan. 1, 2010 2. Add anti-deer sound emitting devide to vehicle. 3. Avoid roads at night and counter daylight risk with anti-deer sound emitting device to vehicle. |
| Baselined | 4/2 | C/S/P | Training Example - Loss of Power in Thunderstorms | If there is a thunderstorm with high winds and lightning strikes occur, then loss of power to homes make occur and people may be without power. | If a thunderstorm occurs and high winds in excess of 60 mph occur (WHAT), then power lines may come down due to high winds (HOW) and loss of power may occur | If power is lost in a storm then homes will not have power. This can lead to loss of food in the refrigerator (COST), alarm clocks that don't work and people may be | Mitigation Plans include: NOTE - the person writing this risk bought a generator to temproarily reduce the risk of power loss. This reduces the current risk, but is only a ... |

- Risks can also be exported into an Excel spreadsheet.
- This allows for easy sorting, searching and customization for reports.
- User can also customize and save their own excel formats for download for the next time a report is run.

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**Summarize Risk Status (Matrix) Report (FOUO)**

| Level 1: | HBCT Test Org |
|---|---|
| Level 2: | All |
| Level 3: | All |
| Level 4: | All |
| Project: | All |

Summarize of Risk Status

8/2/2010

| Likelihood | | Negligible 1 | Marginal 2 | Moderate 3 | Critical 4 | Catastrophic 5 |
|---|---|---|---|---|---|---|
| Near Certainty 5 | | 6 | 0 | 0 | 1 | 0 |
| Highly Likely 4 | | 6 | 1 | 3 | 0 | 0 |
| Moderate 3 | | 1 | 0 | 0 | 2 | 0 |
| Low 2 | | 6 | 1 | 1 | 1 | 0 |
| Not Likely 1 | | 30 | 0 | 0 | 0 | 0 |

**Consequence**

**Risk Assessment Status (Pie Chart) Report (FOUO)**

| Level 1: | HBCT Test Org |
|---|---|
| Level 2: | All |
| Level 3: | All |
| Level 4: | All |
| Project: | All |

Risk Assessment Status (7/1/2010)

Medium, 5
Low, 1
High, 1
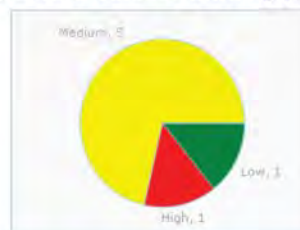
Risk Assessment Status (8/2/2010)

Medium, 7
High, 1
Low, 4
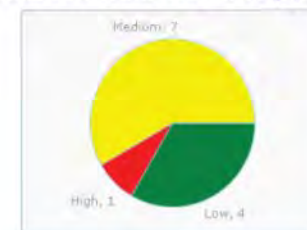
Report current as of 8/2/2010 4:27:35 PM

1

• Risks for a particular folder or a total program team can be depicted with risk matrix summaries or pie charts.

• Historical comparisons between dates can also be done.

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**Risk Information Sheet (FOUO)**

**Risk Title:** Loss of Power in Thunderstorms

**User Defined ID:**

**Status:** Baselined

**Unique ID #:** 659

**Opened Date:** 02/08/2010

**Last Saved Date:** 02/08/2010

**Risk Lead:** Graf, Lisa

**Risk Information Team Members**

**Risk Assessment**



Likelihood / Consequence

**Risk Impacts:**
- [X] Cost
- [X] Schedule
- [X] Performance
- [ ] Other:

**Description of Risk Condition:** If there is a thunderstorm with high winds and lightning strikes occur, then loss of power to homes make occur and people may be without power.
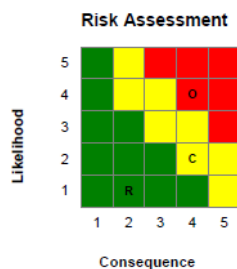
**Context:** If a thunderstorm occurs and high winds in excess of 60 mph occur (WHAT), then power lines may come down due to high winds (HOW) and loss of power may occur (WHAT). If lightning strikes occur (WHAT), then transformers may be hit and damaged (HOW) and loss of power may occur (WHAT). This may occur because power lines are exposed to the environment (WHY) and subject wind damage and lightning strikes. This can affect home and people (WHO) subdivision wide or to any building in the area that the power system supplies power to (WHERE).

**Consequence if Realized:** If power is lost in a storm then homes will not have power. This can lead to loss of food in the refrigerator (COST), alarm clocks that don't work and people may be late to their jobs (SCHEDULE) and worrying about failed systems such as sump pump systems (PERFORMANCE) may cause performance issues at work to those affected.

2/11/2010 9:01:12 AM          Page 1 of 2          rptRiskInfoSheet

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**Risk Information Sheet (FOUO)**

**Current Mitigation Plan(s) for this Risk:**

| Applied to Risk | Plan Name | Status |
|---|---|---|
| X | Bury Power Lines | In Development |

**Rationale for choosing Mitigation Plan(s):** Mitigation Plans include:<br />
NOTE - the person writing this risk bought a generator to temproarily reduce the risk of power loss. This reduces the current risk, but is only a temporary interim mitigation steps.<br />
Final Mitigation Plan:<br />
1. Surveying the power outage database for areas that experience high power loss.<br />
2. Conducting a root cause analysis for the highest risk area as to what the reason is for the power outages. (NOTE - root cause determined to be wind damage in a high wind corridor).<br />
3. Determine what the new requirements are for system performance (how many outages a year, for how many hours and due to what root cause is acceptable) (NOTE - it was determined that only routine maintenance downtime was deemed acceptable for less than 3 hours).<br />
4. Path forward was determined to be to bury the power lines.<br />
5. Need to conduct grid survey to determine if easement land is available to bury the lines. (NOTE ...pment).<br />

**Close-Out Rationale:**

**Mitigation Steps for the applied Plan**

| Step | Mitigation | Due Date | Status | New Con. Level | New Lik. Level | Step Owner |
|---|---|---|---|---|---|---|
| 1 | Purchase a home generator | 03/01/2010 | Complete | 4 - Critical | 2 - Low Likelihood | Barb Dmoch |
| 10 | Monitor area for 5 years to determine how effective the plan has gone. | 04/29/2015 | Not Started | 2 - Marginal | 1 - Not Likely | Donna Brady |
| 2 | Conduct power outage survey. | 03/04/2010 | Complete | 4 - Critical | 3 - Moderate | Lisa Graf |
| 3 | Conduct power outage root cause analysis | 03/08/2010 | Complete | 4 - Critical | 3 - Moderate | Shawn Haase |
| 4 | Determine new reqmt for max. downtime allowed. | 03/10/2010 | Complete | 4 - Critical | 3 - Moderate | Cheryl Rassette |
| 5 | Conduct land availability survey | 03/12/2010 | Complete | 4 - Critical | 3 - Moderate | Matt Sheehy |
| 6 | Determine requirements for burying power lines. | 03/15/2010 | In Progress | 4 - Critical | 3 - Moderate | Mike Olsem |
| 7 | Formulate and present plan to management for approval. | 03/17/2010 | In Progress | 4 - Critical | 3 - Moderate | Mike Baker |
| 8 | Bury the power lines, complete job. | 03/31/2010 | Not Started | 2 - Marginal | 1 - Not Likely | Mark Mazzara |
| 9 | Demonstrate that time to repair of main line is <3 hours. | 04/01/2010 | Not Started | 2 - Marginal | 1 - Not Likely | Brian Graham |

2/11/2010 9:01:12 AM          Page 2 of 2          rptRiskInfoSheet

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- The "Risk Information Sheet" contains the majority of the information for the risk including the description of the risk, context, consequences and mitigation.
- It can be exported into an Acrobat .pdf file, Excel, CSV, etc.

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## Risk Waterfall Report (FOUO)

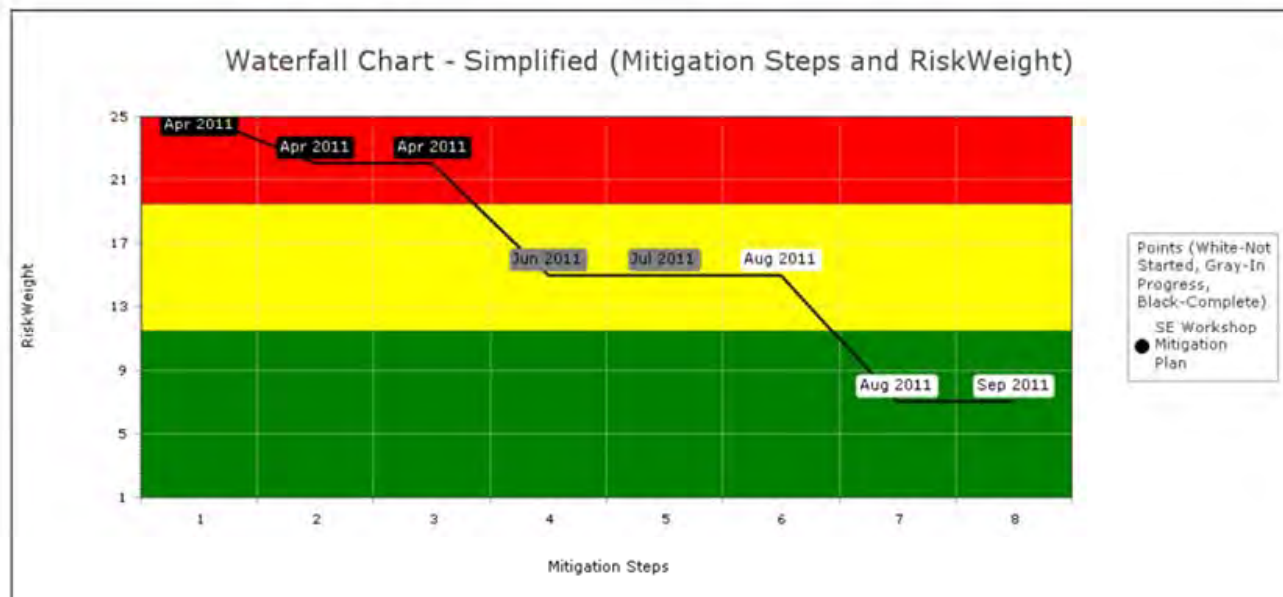| | | | | Consequence | Likelihood |
|---|---|---|---|---|---|
| **Risk ID:** | 1665 | | | 4 | 4 |
| **Risk:** | Systems Engineering (SE) Workshop | | | | |
| **Description of Risk Condition:** | If we do not properly plan for the SE Workshop, then we may not market our SE services effectively. | | | | |

### Mitigation Steps

| Step | Mitigation | Due Date | Status | New L | New C | Step Owner |
|---|---|---|---|---|---|---|
| 1 | Establish objectives, budget and schedule. | 4/1/2011 | Complete | 5 | 5 | L. Graf |
| 2 | Finalize date and time. | 4/29/2011 | Complete | 4 | 4 | C. Crawford |
| 3 | Secure location. | 4/29/2011 | Complete | 4 | 4 | D. Whitehurst |
| 4 | Secure speakers and booth participants. | 6/15/2011 | In Progress | 3 | 3 | C. Crawford |
| 5 | Market event. | 7/1/2011 | In Progress | 3 | 3 | M. Russo |
| 6 | Set up for event. | 8/1/2011 | Not Started | 3 | 3 | M. Russo |
| 7 | Execute workshop. | 8/2/2011 | Not Started | 2 | 2 | SE Group |
| 8 | Begin providing SE services to new customers as applicable. | 9/2/2011 | Not Started | 2 | 2 | SE Group |



Waterfall Chart - Simplified (Mitigation Steps and RiskWeight)

Points (White-Not Started, Gray-In Progress, Black-Complete)

● SE Workshop Mitigation Plan

# What happens when a risk becomes an issue?

*Issue Management is a natural progression of risk management as risks that are not successfully mitigated become issues.*

*It is important to determine a way to formally manage program risks in order to focus efforts on top issues, communicate those issues to decision makers and stakeholders in a timely fashion,  and create corrective action plan paths forward  to resolve them.*

*The Issue Recon Database is tired to Risk Recon and allows for seamless traceability of risks, mitigation plans, issues and corrective action plans.*

*This allows the organizations using it to prioritize their work and resources for both risk and issues.*

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# Risk Recon Based Issues Database

Create a new issue for project: test
Workflow Location: Pre-Workflow state, save first.

Back to the Home Page
Save  Cancel

| Issue Info Sheet | Documents | Corrective Action Team | Corrective Action(s) | Related Projects | Issue Lifecycle |

**Changes must be Saved first before navigating off this web page**

Issue Analysis (Click bar to expand/contract)

| | |
|---|---|
| **Issue ID:** | |
| **User Defined Issue ID:** | |
| **Issue Title:** | * |
| **Status** | Baselined ▼ |
| **Urgent:** | Baselined |
| Check to alert APM/DPM of time sensitive issue | Candidate |
| | Rework |
| | In APM Review |
| **Date Initiated:** | In PM Review |
| **Last Saved On Date:** | Closed |
| **Estimated Closure Date:** | |

For the Issue Status, the IPT has proposed the following status options, listed in the shown dropdown.

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Unclassified

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# Issue Info Sheet (cont):

Create a new Issue for proje[...]
Workflow Location: Pre-W[...]

Back to the Home Page
Save | Cancel

| Issue Info Sheet | Documents | | ...ction(s) | Related Projects | Issue Lifecycle |

Changes must be Saved first b[...]ge

Issue Analysis (Click bar to expand/c[...]

**Issue ID:**

**User Defined Issue ID:**

**Issue Title:**

**Status**

**Urgent:**
Check to alert APM/DPM of time sensitive issue

**Date Initiated:**

**Last Saved On Date:**

**Due Date:**

**Estimated Closure Date:**

**Functional Groups:**

Functional Groups pulldown options:
- Logistics
- Engineering
- Contracting
- Test & Eval.
- Acquisition
- Safety
- Resource Mgmt / Finance
- Product Assurance
- Program Management
- Business Mgmt
- Configuration Mgmt
- Technical Mgmt
- International Programs
- Fabrication
- Training - ONLY FOR TRAINING USE
- Legal
- Security
- Requirements Management
- V6.3 Test Functional Group

Functional Groups...

**Sub Group:**

For the Functional Group pull down, a free form text field (that would appear only if at least one functional group box is checked) is requested to permit decomposition. For example, logistics could break down into spares, transportation, sustainment, convoys, etc. Others may include depots, FOBs, HHQ, AMC, ASA(ALT), ATOs, TTPs, etc.

# *Issue Rating:*

Create a new Issue for project: test
Workflow Location: Pre-Workflow state, save first.

| Back to the Home Page |
| Save | Cancel |

| Issue Info Sheet | Documents | Corrective Action Team | Corrective Action(s) | Related Projects | Issue Lifecycle |

**Changes must be Saved first before navigating off this web page**

Issue Analysis (Click bar to expand/contract)

| Issue ID: | |
| --- | --- |
| **User Defined Issue ID:** | |
| **Issue Title:** | * |
| **Status** | Candidate ▾ |
| **Urgent:** <br> Check to alert APM/DPM of time sensitive issue | ☐ |
| **Date Initiated:** | 2/11/2011 * |
| **Last Saved On Date:** | |
| **Estimated Closure Date:** | |
| **Date Closed:** | |
| **Functional Groups:** | Functional Groups... ▾ |
| **Issue Owner:** | Torres, Dan ▾ * |
| **Priority:** | High <br> Medium <br> Low ▾ |

Ideally, the Priority pull-down menu would shade red/yellow/green based on the rating. The IPT still needs to determine if more dimensions are required.

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# *Issue Impacts:*

| Issue Impacts | | | | | |
|---|---|---|---|---|---|
| Cost: | ☑ | Sustainment ☑ | Contract Revision ☑ | MIPR Required ☑ | RFI Required ☑ |
| | | Operations ☑ | Validation ☑ | Spares ☑ | TD/EMD ☑ |
| | | Labor/Overtime ☑ | WD Required ☑ | Training ☑ | Capital ☑ |

| Issue Impacts | | | | |
|---|---|---|---|---|
| | | Acceptance Testing ☑ | Analysis ☑ | Procurement ☑ |
| Schedule: | ☑ | Development (TD/EMD) ☑ | Deployment ☑ | Redlined ☑ |
| Affects the Critical Path: | ☐ | Characterization ☑ | FRP Decision ☑ | Contracting ☑ |

| Issue Impacts | | | | | | |
|---|---|---|---|---|---|---|
| | | KPP/KSA ☑ | Comms ☑ | Maintainability ☑ | Transportability ☑ | Mobility ☑ |
| | | DOTLPF ☑ | Consumption ☑ | Force Protection ☑ | Op Effectiveness ☑ | Lethality ☑ |
| Performance: | ☑ | | Power ☑ | Survivability ☑ | Network/C4I ☑ | Reliability ☑ |
| Other: | ☐ | | | | | |

> Nested check boxes to show further granularity to describe impacts. "Nested" means optional check boxes only appear when the main impact (Cost/Schedule/Performance) is checked.

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# *Corrective Action Tab:*

This is a tab with more fields to define complex corrective actions vs. a simple issue resolution. This tab does not have to be used. Later increments could include links to root cause methods. The pull down help menu will have reference documentation available for root cause determination.

| Home | Administration | Reports | Actions | New Users | Help |
| --- | --- | --- | --- | --- | --- |

**User:** Dan Torres
**Project:** HBCT Test Org > HBCT Test PMO > HBCT Training > HBCT Training > test

Classified data must not be stored in this risk management tool

**Edit Issue:** Drop down icon is not working
**Workflow Location:** Archived

Back to the Home Page | View History
Save | Cancel | Revive

Issue Info Sheet \ Documents \ Corrective Action Team \ **Corrective Action(s)** \ Related Projects \ Issue Lifecycle

**Select a method to enter corrective action plan(s):**

☐ Immediate Corrective Action

☐ Short-Term Containment Action

☐ Permanent Corrective Action

This screen will allow the user to check the type of corrective action plan they want to enter. Numerous corrective actions plans can be entered for each method.

# *Corrective Action Status:*

| | |
|---|---|
| Mitigation Plan ID: | 423 |
| Name: | Bury Power Lines |
| Status | Executing ▾ |
| Open Date: | Select a Status |
| Last Saved On Date: | Closed |
| Corrective Action Method: | Executing |
| | In Development |
| Plan Review Frequency: | Rework |
| Corrective Action Lead: | In APM Review |
| | In PM Review |

← **Corrective Action Status**

# *Corrective Action Method:*

Corrective Action Methods.. ▾ *
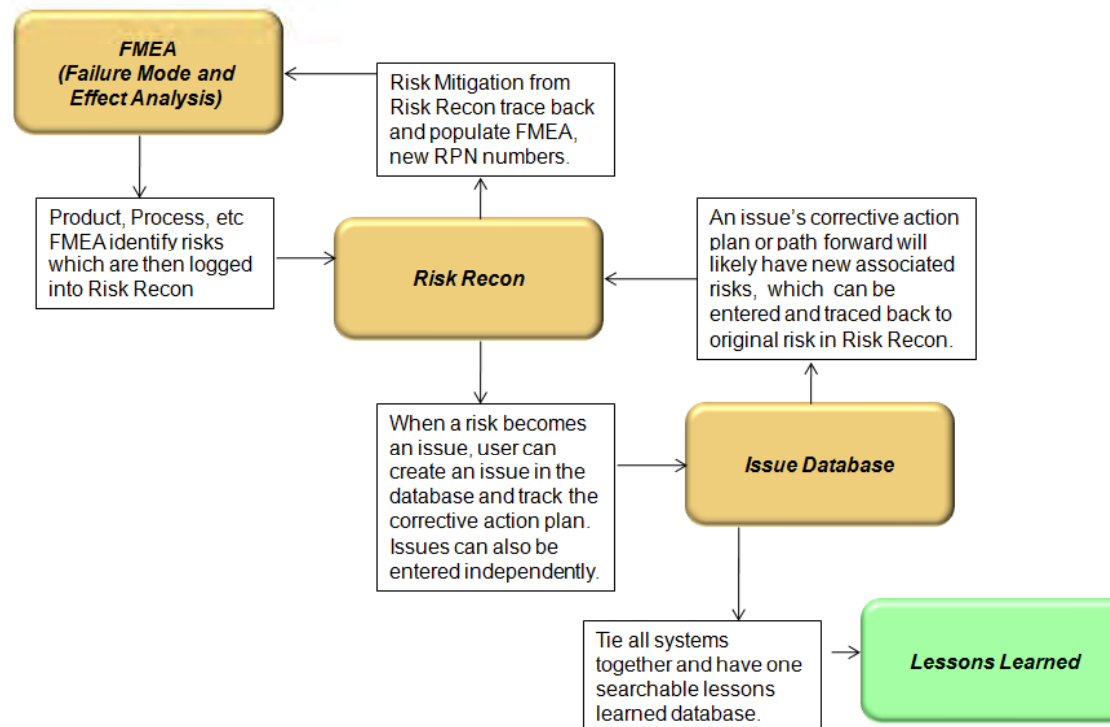
→ **More than one method should be permitted for a single corrective action plan**

- ☐ Containment
- ☐ Resolution
- ☐ Doctrine Change
- ☐ ECP
- ☐ Field Modification/Retrofit
- ☐ Training
- ☐ Assume
- ☐ Transfer

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# Risk Management as an Integrated Approach.



**FMEA**
**(Failure Mode and Effect Analysis)**

Risk Mitigation from Risk Recon trace back and populate FMEA, new RPN numbers.

Product, Process, etc FMEA identify risks which are then logged into Risk Recon

**Risk Recon**

An issue's corrective action plan or path forward will likely have new associated risks, which can be entered and traced back to original risk in Risk Recon.

When a risk becomes an issue, user can create an issue in the database and track the corrective action plan. Issues can also be entered independently.

**Issue Database**

Tie all systems together and have one searchable lessons learned database.

**Lessons Learned**

*Conducting risk management as a proactive, integrated approach will shorten design time, help avoid program mistakes, and deliver a higher quality system to the warfighter in reduced time.*

***Do it right the first time!***

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# Resources

- **Risk Management Guide for DOD Acquisition,**
  http://www.acq.osd.mil/sse/docs/2006RMGuide4Aug06finalversion.pdf

- **Risk Recon :**
  - **To set up training on how to use Risk Recon, or to get your program set up to use the tool, contact:**
    - Becky Addis - 586-214-2582 – rebecca.l.addis.civ@mail.mil
    - Lisa Graf – 586-306-2572 -  lisa.j.graf2.civ@mail.mil

- **Issue Management IPT:**
  - To join the Issues Management IPT or to use the Issues Management tool starting March 2012, contact:
    - Dawn Packard – 586-282-8827 – dawn.m.packard2.civ@mail.mil

- **FMEA Training:**
    - Kadry Rizk – 586-282-5403 - kadry.w.rizk.civ@mail.mil
    - Gregor Rataczak – 586-282-4618 - gregor.a.rataczak.civ@mail.mil

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